National Institute of Environmental Health Sciences

Understanding the demographic implications of climate change: Estimates of localized population predictions under future scenarios of sea-level rise

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Abstract:

Significant advances have been made to understand the interrelationship between humans and the environment in recent years, yet research has not produced useful localized estimates that link population forecasts to environmental change. Coarse, static population estimates that have little information on projected growth or spatial variability mask substantial impacts of environmental change on especially vulnerable populations. We estimate that 20 million people in the United States will be affected by sea-level rise by 2030 in selected regions that represent a range of sociodemographic characteristics and corresponding risks of vulnerability. Our results show that the impact of sea-level rise extends beyond the directly impacted counties due to migration networks that link inland and coastal areas and their populations. Substantial rates of population growth and migration are serious considerations for developing mitigation, adaptation, and planning strategies, and for future research on the social, demographic, and political dimensions of climate change.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: Sea level rise scenarios

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security, Human Conflict/Displacement, Sea Level Rise, Other Exposure

Extreme Weather Event: Flooding, Hurricanes/Cyclones, Landslides

Food/Water Security: Agricultural Productivity

Other Exposure: Sea Level Rise; Saltwater intrusion

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Low Socioeconomic Status, Racial/Ethnic Subgroup, Workers

Other Racial/Ethnic Subgroup: Black/African American; Hispanic white

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content